



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,057	05/13/2005	Dietmar Uhlmann	R.42158	1368

2119 7590 05/16/2006

RONALD E. GREIGG
GREIGG & GREIGG P.L.L.C.
1423 POWHATAN STREET, UNIT ONE
ALEXANDRIA, VA 22314

EXAMINER

BARNEY, SETH E

ART UNIT	PAPER NUMBER
----------	--------------

3752

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/509,057

Applicant(s)

UHLMANN, DIETMAR

Examiner

Seth Barney

Art Unit

3752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 9 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by McCormick (WO 00/08333).

U.S. Patent No. 6,279,841 has been relied upon as a translated copy of WO 00/08333.

Regarding claim 9, McCormick discloses a fuel injection valve for internal combustion engines comprising housing (1) that contains a moving valve element (7) whose movement counter to the elastic force of a spring element (9) controls the fuel supply to the combustion chamber (not shown) of the engine, the improvement wherein the spring element (9) comprises a cylindrical sleeve having a longitudinal axis (2), openings (32) at a number of locations in the wall of the sleeve, the openings (32) being separate from one another to allow the spring element (9) to be elastically deformed in the direction of the longitudinal axis (2). See Figure 1.

Regarding claim 16, the spring element is contained in the housing in an elastically pre-stressed position.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's prior art Figure 1 in view of U.S. Patent No. 4,919,403 to Bartholomew.

Regarding claim 9, Applicant's admitted prior art, Figure 1 of the instant application, discloses all of the limitations of the claim except for the spring element. Bartholomew discloses a spring element (110) that comprises a cylindrical sleeve having a longitudinal axis, openings at a number of locations in the wall of the sleeve, the openings being separate from one another to allow the spring element (110) to be elastically deformed in the direction of the longitudinal axis. See Figure 11 of Bartholomew.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the spring of Bartholomew with the spring of Applicant's prior art Figure 1 in order to provide a spring having the advantages (space and cost for example) taught in column 1 to column 4. Furthermore, Bartholomew expressly discloses that this spring can be used to replace mechanical, hydraulic, and pneumatic assemblies. See column 4 lines 39 to 43.

Regarding claim 10, the openings in the wall of the spring element essentially extend in a radial plane of the longitudinal axis of the spring element. See Figure 11.

Regarding claim 11, two similar openings lie in a radial plane of the spring element, wherein the openings are separated from one another by connecting pieces (114). See Figure 11.

Regarding claim 12, the openings are disposed in at least two radial planes, and the openings of the one radial plane are rotated by 90 in relation to those in the adjacent radial plane. Because the slots curve around the circumference of the spring there are locations in one slot (127 for example) that are rotated 90 degrees relative to the slot in the plane directly below it (135 for example).

Regarding claims 13 and 14, the slots are rounded slot shapes. See Figure 11.

Regarding claim 16, the spring the modified fuel injector would have the spring element contained in the housing in an elastically pre-stressed position.

5. Claims 9,10,13-15, and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's prior art Figure 1 in view of U.S. Patent No. 6,113,082 to Fujino.

Regarding claim 9, Applicant's admitted prior art, Figure 1 of the instant application, discloses all of the limitations of the claim except for the spring element. Fujino discloses a spring element that comprises a cylindrical sleeve having a longitudinal axis, openings at a number of locations in the wall of the sleeve, the openings being separate from one another to allow the spring element to be elastically deformed in the direction of the longitudinal axis. See Figure 5 of Bartholomew.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the spring of Fujino with the spring of Applicant's prior art Figure 1 in order to provide a spring having the advantages (large elastic deformation per unit size for example) taught in column 2 and 3.

Regarding claim 10, the openings in the wall of the spring element essentially extend in a radial plane of the longitudinal axis of the spring element. See Figure 5.

Regarding claims 13 and 14, the slots are rounded slot shapes. See Figure 5.

Regarding claim 15, the openings have a longitudinal axis in relation to which they are symmetrical and wherein the openings have the form of a longitudinal slot that tapers in the middle in relation to this longitudinal axis. See Figure 5.

Regarding claim 16, the spring the modified fuel injector would have the spring element contained in the housing in an elastically pre-stressed position.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references disclose relevant fuel injectors having springs: Rembold et al., Potschin et al., Wear et al., Shinogle et al., Bryan, and Tian. The following references disclose relevant springs: Bartholomew ('121), Maier, Sato, Modrey, Irifune, Hawkins, and Anderson.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seth Barney whose telephone number is (571)272-

Art Unit: 3752

4896. The examiner can normally be reached on 7:30am-5:00pm (Mon-Fri), first Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on (571)272-4919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Seth Barney
Examiner
Art Unit 3752

sb

sb



David A. Scherbel
Supervisory Patent Examiner
Group 3700